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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/687,454	10/16/2003	Daniel Scott Homa	073103-1	8739

7590  
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03/01/2007

EXAMINER
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DEGHAN, QUEENIE S

ART UNIT	PAPER NUMBER
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1731

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/01/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/687,454

Applicant(s)

HOMA, DANIEL SCOTT

Examiner

Queenie Dehghan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Antos et al. (2002/0150365). Regarding claims 1, 6 and 7, Antos et al. disclose a process for making an optical preform comprising, providing an optical preform tube, depositing a porous unsintered soot layer comprising SiO<sub>2</sub> and GeO<sub>2</sub> ([0016]) within the inner surface of the tube ([0022]), exposing the soot layer to a flow of metal halide in an oxygen free ambient for a period of time sufficient to eliminate the presence of oxygen defects in the soot layer ([0007], [0008], [0018], [0034], [0043]), sintering the metal halide treated soot layer in an oxygen free ambient to form a glass layer ([0017], [0030], [0033]), and collapsing the sintered preform tube to form a solid core optical fiber preform ([0017]).
3. Regarding claim 2, Antos et al. further disclose depositing a clad silica layer as well as a core layer ([0022]).

4. Regarding claims 3 and 4, Antos et al. disclose the option of depositing a cladding layer comprised of a depressed index component such as fluorine ([0015]).
5. Regarding claims 10 and 11, Antos et al. disclose possible metal halides as  $\text{GeCl}_4$  or  $\text{SiCl}_4$  ([0019]).
6. Regarding claim 12, Antos et al. disclose performing the metal halide treatment for a time period at least 10 minutes to at most 10 hours ([0018]).
7. Regarding claim 14, Antos et al. disclose performing the metal halide treatment at a temperature range of  $1000^\circ\text{C}$  to  $1150^\circ\text{C}$  ([0018]).

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 5, 8, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Antos et al. (2002/0150365), as applied to claim 1 above, in view of Zhang et al. (6,532,774). Antos et al. fail to disclose a soot deposition temperature. Zhang et al. teach of an example of MCVD where soot is deposited at a lower temperature of  $1650^\circ\text{C}$  (col. 24 lines 60-62). It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the deposition temperature of Zhang et al. in the process of Antos et al. because higher temperatures may result in partial sintering of the soot deposited.

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10. Claims 13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Antos et al. (2002/0150365), as applied to claim 1 above, in view of Ishikawa et al. (English Abstract of JP 02180729). Antos et al. disclose performing the metal halide treatment in the presence of ambient containing He ([0043]), but do not mention using an ambient of He and N<sub>2</sub> for either the metal halide treatment or sintering steps.

Ishikawa et al. teach treating a soot preform with a metal halide in the ambient of He and N<sub>2</sub> as well a sintering in an ambient of He and N<sub>2</sub>. It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the ambient of He and N<sub>2</sub> of Ishikawa et al. in the process of Antos et al. as a viable alternative to prevent the introduction of oxygen into the preform during treatment and sintering.

11. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Antos et al. (2002/0150365), as applied to claim 1 above, in view of Homa (2003/0213268).

Antos et al. fail to disclose a sintering temperature of approximately 2200°C. Homa teach sintering a MCVD preform at a temperature of 2100°C ([0034]). 2100°C is interpreted to be approximately 2200°C (±10%). It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the sintering temperature of Homa in the process of Antos et al. to ensure complete sintering.

12. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Antos et al. (2002/0150365), as applied to claim 1 above, in view of Oh et al. (6,053,013). Antos et al. fail to disclose collapsing in an atmosphere of Cl<sub>2</sub> and/or He. Oh et al. teach a MCVD process where the preform tube is collapsed while supplying Cl<sub>2</sub> and He. It would have been obvious to one of ordinary skill in the art at the time the invention was

made to utilize the ambient of  $\text{Cl}_2$  and He of Oh et al. in the collapsing step of Antos et al. to prevent contamination at the high temperatures of collapsing tubes.

13. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Antos et al. (2002/0150365), as applied to claim 1 above, in view of Sakar (4,310,340). Antos et al. fail to suggest a temperature for the collapsing step. Sakar teaches collapsing a MCVD preform tube at a temperature of  $2200^\circ\text{C}$ . It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the high collapsing temperature of Sakar in the collapsing step of Antos et al. in order for silica tubes to collapse, as taught by Sakar.

14. Claims 19 and 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Antos et al. (2002/0150365) in view of Ishikawa et al. (English Abstract of JP 02180729), Araujo et al. (5,735,921), and Herron et al. (4,627,160). Antos et al. disclose a process for making an optical preform comprising, providing an optical preform tube, depositing a porous unsintered soot layer comprising  $\text{SiO}_2$  and  $\text{GeO}_2$  ([0016]) within the inner surface of the tube ([0022]), exposing the soot layer to a flow of metal halide in an oxygen free ambient for a period of time sufficient to significantly reduce the presence of oxygen defects in the soot layer ([0007], [0008], [0018], [0034], [0043]), sintering the metal halide treated soot layer in an oxygen free ambient to form a glass layer ([0017], [0030], [0033]), and collapsing the sintered preform tube to form a solid core optical fiber preform ([0017]). Antos et al. further disclose depositing a clad silica layer as well as a core layer ([0022]). However, Antos et al. fail to disclose sintering in an environment of  $\text{SiCl}_4$ , He, and  $\text{H}_2$ . Ishikawa et al. teach sintering in

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ambient of  $\text{SiCl}_4$ , He and  $\text{N}_2$ . Furthermore, Arjaujo et al. teach the use of Helium and  $\text{H}_2$  in the consolidation of optical performs (col.7 lines 2-3). Herron et al. also teach a sintering process that is typically done in either  $\text{N}_2$  or  $\text{H}_2$ . It would have been obvious to one of ordinary skill in the art at the time the invention was made to use  $\text{N}_2$  or  $\text{H}_2$  interchangeably in the consolidation step comprising  $\text{SiCl}_4$ , He of Ishikawa et al., as taught by the examples of Arjaujo et al. and Herron et al. due to their ability to create a reducing atmosphere. Additionally, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the ambient of  $\text{SiCl}_4$ , He and  $\text{N}_2$  of Ishikawa et al. and  $\text{H}_2$  of Araujo et al. and Herron et al. in the process of Antos et al. as a viable alternative to prevent the introduction of oxygen into the preform during treatment and sintering.

### ***Response to Arguments***

15. Applicant's arguments filed December 12, 2006 have been fully considered but they are not persuasive. The applicant argues that Antos et al. uses a less than a stoichiometric amount of oxygen in paragraph [0020]. Antos et al. does so in the deposition and doping step of manufacturing the preform. Claims 1 and 19 recites that treatment and sintering steps are limited to an oxygen free ambient, which Antos et al. clearly provides in example 2 ([0043]), wherein only He and  $\text{GeCl}_4$  gases are used for the treatment. Furthermore, since sintering immediately follows the treatments step in

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the same furnace, which is already filled with just He and GeCl<sub>4</sub>, the sintering is also performed in an oxygen free ambient.

16. The applicant also argues that Antos et al. suggest that a surplus of oxygen should be eliminated, but not in the ambient in paragraph [0034]. Antos et al. disclose the elimination of surplus oxygen and associated defects in the soot preform, as does the applicant in step c of claim 1, which recites "eliminate the presence of excess oxygen defects in the soot layer. As mentioned above, oxygen is not present in the ambient in the treatment and sintering steps as presented in example 2 by Antos et al.

### ***Conclusion***

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.



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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Queenie Dehghan whose telephone number is (571)272-8209. The examiner can normally be reached on Monday through Friday 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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